

A Primer on the Long-Term Appeal of Data Centers



Darin Turner
Invesco Real Estate

With the acceleration of hyperscale

data generation, rising computing workloads, and increasing data storage needs, secular demand appears robust for data center properties. Streaming content, social media, and the burgeoning Internet of Things are all large contributors to data center usage

today. In the future, artificial intelligence, self-driving cars, and blockchains will provide the potential for a leap in data storage needs. The trend for companies to outsource data management to specialist companies is also driving demand into the data center space. With numerous tailwinds in place, data centers have generated strong income streams over full market cycles. Extremely high tenant retention rates and long lease durations contribute to the durability of the sector. This article covers the basics of data center real estate attributes, the different permutations of data center services, the locational attributes of the sector, and an overview of fundamentals. Although data center properties are in operation outside the US, this article focuses mostly on the domestic US data center market, the largest in the world.

Data Centers Compared to Traditional Real Estate Sectors

Data centers differ from some of the more traditional sectors in real estate. Their core function is to house networked servers used by entities for remote storage, processing, and distribution of vast amounts of data. Data centers' external shells do not appear that different from industrial properties. Inside, the differences are considerable. A landlord owns the shell of the data center building, but tenants place and own sophisticated servers and racks and manage their own digital content. Data center owners provide critical redundant power to ensure that cooling does not fail in case of any local utility interruptions. Once tenants are installed in data centers, moving them is prohibitively costly, contributing to extremely high retention rates.

Last, the rental structure is based on power usage as opposed to physical space.

Although the underlying fundamentals of data centers are similar to those of other sectors, the locational attributes, operating costs, and capital expenditures highlight some major differences. Locational attributes are critical to data centers' stability, connectivity, and predictability. Data centers must have access to belowground fiber networks in areas that can provide uninterrupted power and have limited exposure to natural disaster risk. The primary costs for owners to operate the properties range from electricity to operate and cool servers, engineering and maintenance, and on-site security. Capital expenditures are likewise focused on backup generators and cooling equipment. The goal is to limit downtime for clients in terms of minutes or hours per year.

Types of Data Centers

Data centers come in different shapes and sizes but generally fall into two camps—enterprise and network dense. Enterprise data centers house most of the data that society accesses, including videos, websites, and applications. In the case of an enterprise-hyperscale arrangement, one tenant occupies an entire data center. By contrast, enterprise-colocation arrangements house multiple tenants. Network-dense data centers have many of the properties of enterprise-colocation but are differentiated by the number of networks interconnecting within the facility. This type of network is extremely difficult to replicate, and a tenant faces prohibitive switching costs. Each of the two largest publicly listed US data center companies—Equinix and Digital Realty—has a blended mix of hundreds of enterprise and network-dense data centers worldwide. The list of hyperscale tenants crosses both cloud service providers and internet companies. This includes, for example, Microsoft, Amazon, Google, Facebook, Netflix, Apple, and the US government. One commonality of the largest hyperscalers is their deep level of capitalization and strong credit ratings—all important signals for tenant health.



Locational attributes for data centers are mission-critical and come down to elements such as power reliability, fiber access, environmental risk, regulatory framework, and land sourcing. As mentioned earlier, an uninterrupted power supply is essential for operating a data center. Tenants and operators need to evaluate the availability and reliability of electricity and the cost of service. Grid security and the potential for green options are also paramount. For a data center to communicate information outside the building, it must have access to underground fiber superhighways. Long-haul fiber carries information from the data center to local networks and ultimately to consumers. Connection speed and low latency are likewise essential. Data center developers must avoid environmental challenges such as earthquakes and floods. They should also consider the political environment—specifically, the local tax framework, availability of business incentives, and local regulations. Last, land must be available and reasonably priced, with limited risk of neighborhood

challenges to potential expansion. In the US, the most notable locations for data centers include northern Virginia, northern California, Dallas, Chicago, Phoenix, northern New Jersey, Atlanta, and Los Angeles.

Growth Potential

Invesco Real Estate considers data centers a structural growth sector, given the explosion of data consumption and computing workloads. Most of the world's data has been generated in just the past two years. The growth of internet users accessing social media, video streaming, audio streaming, emails, and texts has been astonishing. The next step toward greater data center success in the coming years could come from the wave of artificial intelligence. AI has had a place in people's lives for a long time. Think about virtual assistants, emails and texts that finish sentences, or recommendations from media apps. The current excitement over AI stems from the substantial time savings it offers. The basics of AI are to aggregate immense amounts of data to build a

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model and then train that model on what to do. Most current AI models are trained and used in data centers. The industry generally agrees that specialized AI data centers may require smaller and denser spaces and that the servers therein could consume five to ten times the power consumed by traditional servers. AI may potentially push the data center sector into a sustained period during which strong demand consistently exceeds supply growth.

ESG Considerations

Given the substantial energy footprint associated with operating data centers, sustainability is becoming increasingly important for data center tenants and operators. Tenants will likely continue pushing operators to help achieve ESG goals and move closer to carbon neutrality. Improving operating efficiencies has been a focus of data center owners, and although storage capacity has exploded globally in the past few years, energy consumption has barely budged collectively across the data center sector. Sourcing renewables is a significant focus of operators, and some cloud companies are among the largest renewable power consumers globally. The focus on renewable power is expected to intensify in the data center space, and green certifications for both operators and tenants are likely to become more commonplace.

Sector Confusion?

With the many attractive attributes of the data center business, the question exists whether this sector is real estate focused, infrastructure focused, or something else entirely. Invesco Real Estate believes that data center operators are classified as real estate for several reasons. Data centers share many common aspects with more-traditional segments of real estate. The data center business model involves siting, acquiring property, zoning, developing, and a source of value driven by tenant-generated rents. The Internal Revenue Service and the Treasury Department have determined that data centers qualify as real estate and can organize themselves as REITs. The largest data center operators in the US have all structured themselves as REITs and began doing so more than a decade ago. Private market

real estate investors have likewise gradually added data center exposures as part of diversified portfolios, often on behalf of public and sovereign funds.

Conclusion

Invesco Real Estate believes that the data center sector will exhibit a strong pattern of structural growth for many years to come. The business model has compelling demand drivers stemming from how people consume data and how that information must be stored and disseminated. With the exponential yearly increase in data consumption, data centers provide an essential service to society, and telecommunications and technology companies could not be successful without them. Artificial intelligence is also opening a new avenue for consumers to receive more complex content in a less time-consuming manner. That should contribute to the future relatively inelastic demand for data centers. In the listed REIT space, data centers have been among the best overall performers over long cycles. And many data center constituents have been acquired by either public or private interests. This type of success has the potential to play out in a similar fashion within the private markets as well. ■

Darin Turner is Managing Director and Chief Investment Officer, Listed Real Assets, North America at Invesco Real Estate.

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